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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,973	06/30/2003	Young Gyu Jung	P23718	6953
7055	7590	08/23/2004	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			MCALEENAN, JAMES M	
			ART UNIT	PAPER NUMBER

3745

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/607,973

Applicant(s)

JUNG ET AL.

Examiner

James M McAleenan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to because:

- 1) rotational direction has not on any of the drawings, as well as
- 2) shaft has not been labeled.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the rake angle (r) (see page 11 ,lines 8-11 of specification and claim 8-9) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Choi (U.S. Patent Number 6,394,754). Choi discloses a cool air circulation type axial flow fan for circulating cool air in a refrigerator (see Figure 7 and Col. 1, lines 5-10). Choi discloses a hub connected to a motor via a rotating shaft of the motor (see Figure 7 and Col. 1, lines 49-53). Choi discloses a

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plurality of spaced blades mounted on the outer circumference of the hub (see Figure 7 and Col. 4, lines 50-56). Choi discloses the number of blades being set between 6-8, wherein each of the blades has a sweep angle between 50 and 65 degrees (see Figure 7 and Col. 5, lines 10-16). Regarding claim 2, Choi discloses the fan rotating counterclockwise when seen from a positive pressure surface of each of the blades.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (U.S. Patent Number 6,394,754) in view of Min et al. (U.S. Patent Number 6,287,078). The Choi device in the rejection of claim 1 above, discloses all the claimed elements including (Regarding claim 4) the sweep angle being 50-52 degrees. Choi discloses (Regarding claim 5) each of the blades having a pitch angle that is large at the hub and small at the tip of each of the blades. Choi discloses (Regarding claim 6) the pitch angle linearly reduced from the hub to the tip of the each of the blades. Choi discloses (Regarding claim 7) the pitch angle being 39-41 degrees at the hub and 30.5-32.5 at the tip of each of the blades. Choi discloses (Regarding claim 8) each of the blades having a prescribed rake angle (r) formed on the positive pressure surface of the each of the blades. Choi discloses (Regarding claim 9) the rake angle being 20-22 degrees on the positive pressure surface of each of the blades. Choi discloses (Regarding claim 10) each of the

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blades having a maximum camber position uniformly distributed from the hub to the tip of each of the blades. Choi discloses (Regarding claim 11) the maximum camber position being 0.7 on the assumption that positions of the leading edge of the each of the blades and the trailing edge of each of the blades are 0-1, respectively. Choi discloses (Regarding claim 12) each of the blades having a maximum camber ration, wherein the maximum camber ratio is uniformly distributed between the hub and tip of each of the blades. Choi discloses (Regarding claim 13) the maximum camber ratio being 6-8 percent. However, Choi does not disclose the number of blades being 7.

However, Min et al. (U.S. Patent Number 6,287,078) (see Col. 5, lines 25-30 of Min et al.) discloses the number of blades being 7. It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was made, to modify the Choi device by incorporating the number of blades as taught by Min et al., for the purpose of having blades that reduce flow noise over a relatively wide frequency band as claimed by Applicant's claimed invention.

PRIOR ART

The prior art made of record but not relied upon is considered pertinent to applicant's disclosure and consists of 6 patents.

Alizadeh (U.S. Patent Number 5,393,199) is cited to show similar blade features as claimed by Applicant's invention.

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Sato et al. (U.S. Patent Number 6,113,353) is cited to show similar blade features as claimed by Applicant's invention.

Perosino (U.S. Patent Number 4,684,324) is cited to show similar blade features as claimed by Applicant's invention.

Yapp et al. (U.S. Patent Number 5,297,931) is cited to show similar blade features as claimed by Applicant's invention.

Van Houston et al. (U.S. Patent Number 6,287,078) is cited to show similar blade features as claimed by Applicant's invention.

Kim et al. (U.S. Patent Number 6,325,597) is cited to show similar blade features as claimed by Applicant's invention.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M McAleenan whose telephone number is 703-308-2827. The examiner can normally be reached on M-F 8:30-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on 703-308-1044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J. M. McAleenan 8/16/04

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8/20/04